

Active Chemistry and the National Science Education Standards

Active Chemistry was designed and developed to provide teachers with instructional strategies that model the following from the National Science Education Standards:

Guide and facilitate learning

- Focus and support inquiries while interacting with students.
- Orchestrate discourse among students about scientific ideas.
- Challenge students to accept and share responsibility for their own learning.
- Recognize and respond to student diversity; encourage all to participate fully in science learning.
- Encourage and model the skills of scientific inquiry as well as the curiosity and openness to new ideas and data and skepticism that characterize science.

Engage in ongoing assessment of their teaching and student learning

- Use multiple methods and systematically gather data about student understanding and ability.
- Analyze assessment data to guide teaching.
- Guide students in self-assessment.

Design and manage learning environments that provide students with time, space and resources needed for learning science

- Structure the time available so students are able to engage in extended investigations.
- Create a setting for student work that is flexible and supportive of science inquiry.
- Make available tools, materials, media, and technological resources accessible to students.
- Identify and use resources outside of school.

Develop communities of science learners that reflect the intellectual rigor of scientific attitudes and social values conducive to science learning

- Display and demand respect for diverse ideas, skills, and experiences of students.
- Enable students to have significant voice in decisions about content and context of work and require students to take responsibility for the learning of all members of the community.
- Nurture collaboration among students.
- Structure and facilitate ongoing formal and informal discussion based on shared understanding of rules.
- Model and emphasize the skills, attitudes and values of scientific inquiry.

Assessment Standards

- Features claimed to be measured are actually measured.
- Students have adequate opportunity to demonstrate their achievement and understanding.
- Assessment tasks are authentic and developmentally appropriate, set in familiar context, and engaging to students with different interests and experiences.
- Assesses student understanding as well as knowledge.
- Improve classroom practice and plan curricula.
- Develop self-directed learners.

ACTIVE CHEMISTRY AND THE NATIONAL SCIENCE EDUCATION STANDARDS

Active Chemistry Chapter	The Periodic Table	Cool Chemistry Show
Physical Science		
Structure of atoms	•	•
Structure and properties of matter	•	•
Chemical reactions	•	•
Motions and forces	•	
Conservation of energy and increase in disorder	•	•
Interactions of energy and matter	•	
Unifying Concepts and Processes		
Systems, order and organization	•	•
Evidence, models and explanations	•	
Constancy, change and measurement	•	•
Evolution and equilibrium		•
Form and function		
Science as Inquiry		
Identify questions and concepts that guide scientific investigations	•	•
Design and conduct scientific investigations	•	•
Use technology and mathematics to improve investigations	•	•
Formulate and revise scientific explanations and models using logic and evidence	•	•
Communicate and defend a scientific argument	•	•
Understand scientific inquiry	•	•
Science and Technology		
Identify a problem or design an opportunity	••	•
Propose designs and choose between alternate solutions		
Implement a proposed solution		
Evaluate the solutions and their consequences		•
Communicate the problem, process, and solution	•	•
Understand science and technology	•	•
Science in Personal and Social Perspectives		
Personal and community health		
Population growth		
Natural resources		
Environmental quality		
Natural and human induced hazards		
Science and technology in local, national, and global challenges		
History and Nature of Science		
Science as a human endeavor	•	•
Nature of scientific knowledge	•	•
Historical perspectives	•	